DOCUMENT RESUME

ED 140 320 CS 203 456

AUTHOR Perron, John D.
TITLE Composition with a Cognitive Twist.
PUB DATE Mar 77
NOTE 15p.; Paper presented at the Annual Conference on English Education (15th, Knoxville, Tennessee, March 24-26, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Cognitive Development; *Cognitive Processes; *Complexity Level; *Composition (Literary); Descriptive Writing; Educational Theories; Elementary Secondary Education; Expository Writing; Narration; *Syntax; Teaching Methods; *Writing

ABSTRACT

This paper suggests that a change in mode of expression --narrative, descriptive, or expository--can influence the syntactic complexity of children's writing. The implications of the research studies reviewed here may offer direction for education in general. Instructional strategies which make use of variation in writing mode to encourage gains in complexity may be expected to direct students toward their highest levels of performance. Among the topics discussed in this context are the influences of audience and "purpose" in writing, relevant paradigms of cognitive development and functioning, empirical evidence of developmental change, and a linguistic analogy for cognition. (KS)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

A paper presented at the annual meeting of the Conference on English Education, Knoxville, Tennessee, March 1977

ED140320

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY

John D. Perron

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER.

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

COMPOSITION WITH A COGNITIVE TWIST

John D. Perron

University of Georgia
Athens, Georgia

> The tortoise and the hare were racing and the hare had a hed start but the hare was showing off to much so he lost.
>
> To build a terrarium, well, I usually start off with about a bucket of potting soil for a 20-gallon tank. And if you won't to put a pond in you would half to put in a pump so the water would circulate freely. The best food for a ring neck snake is small todes which you can find at Lake Loganita and goldfish which you can get at the store. Please save this for Mrs. B because she's going to copy it.

The above writings were produced by the same fourth grader at two different sittings. They are typical of the range of ability found at this level. The different sentence structures spotlight the syntactic complexity area of writing research, which is beginning to produce insights for composition instruction, evaluation, and research and which may also soon shed some light on cognitive development.

In the first writing session, he and his classmates were asked to retell the story of a cartoon feature they were shown. In the second, they were asked to explain what they were doing in their favorite learning centers. Both writings were produced in 20-minute sessions, using topics that would elicit the narrative

CS203 456

and expository modes of discourse. Both writing sessions were directed by an outside researcher who asked the children to provide him with a sample of their writing ability.

Writing analysis

In modern writing analyses, sentence structure differences are analyzed via changes in complexity. Writing researchers refer to "syntactic complexity" when they analyze the way sentences become more structurally complex, because syntactic changes focus on embedding and conjoining processes which allow sentences to become more elaborate. Hunt (1,2) gave research its current standard for measuring syntactic complexity by devising the "minimal terminable unit," or T-unit. Since children seldom use capitals and periods to offset their sentences like adults, Hunt believed it possible to isolate the grammatically terminable sentence by more objective means. Hunt developed the T-unit because, as he put it,

> grammar textbooks usually say that a sentence must have one main clause but may also have one or more subordinate clauses and various kinds of phrases attached to or embedded in it. So cutting a passage into T-units will be cutting it into the shortest units which it is grammatically allowable to punctuate as sentences. In this sense, the T-unit is minimal and terminable. Any complex or simple sentence would be one T-unit, but any compound or compound-complex sentence would consist of two or more T-units. (2:4)

Using the T-unit method of analysis, we can look closer at the two writing samples. In the first, the four T-units are:

1. The tortoise and the hare were racing.
2. And the hare had a head start.
3. But the hare was showing off too much.
4. So he lost.

Besides illustrating how children use conjunctions like "and" and "but" to tie their ideas together, the conjoining process of combining subjects is evident in the first sentence. However, no embedding of clauses within the sentences are present. Thus, all remain simple sentences with no expansion.

But a look at the four isolated T-units of the second writing illustrates a high amount of syntactic complexity:

1. To build a terrarium, well, I usually start off with about a bucket of potting soil for a 20-gallon tank.
2. And if you want to put a pond in you would have to put in a pump so ~~so~~ the water would circulate freely.
3. The best food for a ring neck snake is small toads which you can find at Lake Loganita, and small goldfish, which you can get at the store.
4. Please save this for Mrs. B because she's going to copy it.

Putting aside the question of continuity, the structural complexity reflects a maturer writer's ability to concisely communicate information. The above types of syntactic embeddings include adverb clauses, reduced adverbials, and--very rare at this level--two conjoined adjective clauses. Through such processes, writers are able to utilize several different ways to get their ideas across. And it is that fluency with alternative ways of saying things that provides writers with the means of writing well. Without getting bogged down in further explanations of the syntactic refinements, we can comment on two possible explanations which recent writing research has focused on: the influence of the audience and the influence of the modes of discourse.

Two Influences

It is generally conceded that a person will write differently for different audiences. For instance, a look at the way the two samples were collected woul

incline an observer to believe that the first was written for a general audience (including the outside researcher), while the second was written for "Mrs. B" and possibly the student's peers in the learning center. Thus, the observer might conclude that the two writings differed because of the different audiences to which they were directed.

Braddock et al (3) summarized research in written composition up to 1963. They pointed out that the "effect on writing of having the student compose his paper for different kinds of readers" was an unexplored area. However, audience as an influence on syntactic complexity is beginning to be investigated, as is illustrated in a recent study by Smith and Swan (4). They investigated the writings of sixth graders, college freshmen, and college upperclassmen. Using Smith's rewrite instrument, "Bee," they sought to find if the writers could adjust their syntactic complexity levels up or down for different audiences. First, they asked the writers to rewrite the Bee story as well as they could--for a measure of normal writing ability. Using different strategies, they asked the writers next to write "down" for less mature writers; finally, they asked the writers to write "above" for more mature writers. Only the college students were able to adjust their syntactic abilities, succeeding only in writing below their normal ability. None of the groups were able to write above normal ability. The sixth graders could not be influenced by audience demands to use significantly different syntax. They appeared to be more restrained by underlying structural capacity than the more mature writers. Thus, when it comes to the underlying syntactic complexity of sentences, audience seems to play a role in allowing a limited facility for changing syntax in more mature writers--but not, apparently, in elementary students.

Research investigating the relationship of the modes of discourse and syntactic complexity also has been revealing. The modes of discourse usually refer to the classical strategies of argumentation, exposition, narration, and description. Most of us can sense that when we argue a point of view we use different expressive devices than when we explain a process (exposition), tell a sequence of events (narration), or depict details (description).

Seegars (5) was one of the earliest researchers to document the structural differences surfacing in the mode-based writings of elementary school children. The results of that 1933 study demonstrate that the modes of discourse account for the presence or absence of certain sentence structures. Using a count of dependent clauses in the writings of fourth, fifth, and sixth graders, Seegars found that the mode of argumentation contained the most complexity, followed by exposition, then narration-description (which Seegars lumped together)

Recently, San Jose (6) used Hunt's T-unit method of analysis, among other measures, to analyze fourth-grade writings in the four modes of discourse. For her research, San Jose devised a five-week writing exchange between American and British school children. Commenting on her findings, she concluded that "when fourth grade children changed no more than the mode in which they were writing, their syntax changed significantly" (6:5). Like Seegars, San Jose demonstrated that the highest level of syntactic complexity occurred in the mode of argumentation, followed by exposition, narration, and description. Similar findings were reported for relationships between written complexity and the modes by Johnson (7) and Bortz (8). In addition, relationships between the modes and oral language production has been reported by Pope (9).

Perron (10, 11) investigated the mode-based writings of 153 third-, fourth-, and fifth-grade students. He not only found grade level differences in written syntactic complexity by mode but also ability differences within grade. His

results showed that children at low ability levels write significantly less complex T-units than middle ability children who, in turn, write significantly less complex T-units than high ability students--when their writings are investigated within the four modes of discourse.

These studies all seem to reveal that mode is related to the underlying syntax of an expression. This realization leads to inferences about natural development in writing. Since different levels of syntactic complexity appear in the different modes, it takes no leap of the imagination to suggest that the different modes of discourse may provide children with the challenge of higher and higher structural complexities. By varying their mode bases--a basic requirement of reality--children naturally experience encouragements for more complex expressions. The resulting insight is that the different modes themselves may encourage writing gains--in a very natural way--by presenting different syntactic challenges. Such a possibility becomes more obvious when cognitive and linguistic insights are connected.

Cognitive Connections

Piaget's inspiration for developmental psychology was the concept of "equilibration," which Phillips (12) described as a process whereby cognitive structures go through changes that result in qualitative differences over time. He explains:

> Structures continually move toward equilibrium, and when a state of relative equilibrium has been attained, a structure is sharper, more clearly delineated, than it had been previously. But the very sharpness points up inconsistencies and gaps in the structure that had never been salient before. Each equilibrium state therefore carries with it the seeds of its own destruction, for the child's activities are thenceforth directed toward reducing those inconsistencies and closing those gaps. Equilibrium is always dynamic and is never absolute, but the product of each of the major units of development (Sensorimotor, Concrete Operations, and Formal Operations) is a relatively equilibrated system of actions--an equilibrium. (12:16-17)

Intellectual development is portrayed by Piaget as a process of cognitive structures moving from equilibrium through disequilibrium to a new level of equilibrium--organization and reorganization. With each new level, the old structural operations are integrated into the more complex ones. This compares with linguistic development in that children move to higher levels of linguistic competence by incorporating previous syntactic structures into more advanced syntactic structures (13,14).

Other similarities have been pointed out by developmental psycholinguists such as Sinclair-de-Zwart (15). She found, in language studies involving children at various developmental stages, that "operational structuring and linguistic structuring or rather linguistic restructuring thus parallel each other" (15:275).

Although such parallel entities may develop in related ways, there is little proof regarding one preceding the other. According to Slobin (16), however, cognition precedes language, since in his studies "the pacesetter in linguistic growth is the child's cognitive growth" (16:184). Piaget (17) claims that structures of thought are rooted in action and sensorimotor mechanisms which apparently lie deeper than linguistic structures. Slobin believes: "We are just beginning to sense the intimate relations between linguistic universals and cognitive universals, and are far from an adequate developmental theory of either" (16:176).

Empirical Connections

Piaget's description of operational structuring processes are theoretically possible, but an empirically based understanding of linguistic structuring and restructuring may offer specific insights into the way the two "parallel" and "intimately related" processes develop. This is exemplified to an extent in an experiment with first-grade writers by Anderson and Bashaw (18). In their study, 10-minute discussion periods were used to encourage first graders to upgrade their skills

in writing descriptive and argumentative themes. The findings demonstrated that rated quality increased in description but not in argumentation themes. According to the authors, "The D (Description) themes required some logical organization of thought but a minimum of abstraction as compared to the writing of the A (Argumentation) themes" (18:246). They refer to Piaget's claim (19) that a lessening of egocentrism and an increase in logical forms take place in children 7-8 years of age (entering the concrete operational stage). They also point out that Piaget (20) demonstrated that abstract, logical thought begins in verbal communication at about the first-grade level.

However, the content of that "logical, abstract thought" also is of interest. In illustrating the importance of the social factor at the concrete operational stage, Piaget (17) has shown how relationships with other children allow an active interrelating of differences: what one child does may be different but no longer totally unacceptable to another child. This new level encourages reciprocity. Also, such socializing leads to "arguments and disagreements (which) give rise to negations and inverse operations" (17:129). Both reciprocity and inversion-negation encourage gains toward a major cognitive accomplishment, reversibility. Piaget says:

> Reversibility develops progressively in the course of the child's mental evolution. The child at the sensorimotor level is aware only of a practical reversibility in proximal space (the "group of displacements" built up during the second year of life) and the preoperational representations only present a semi-reversibility on the plane of thought linked to approximate regulations of compensations (correction of a gross error, etc.). The concrete operations comprise two parallel forms of reversibility, inversion and negation in the operations of classes and reciprocity in the operations of relations. (17:130)

An investigation of the ingredients of argumentation will demonstrate its link to negation and inverse operations. One arguing a point of view must be

able to turn around contradictions and negate opposition. The child entering the concrete operational level will not be forced into such strategies but will consume linguistic and experiential stimuli as the assimilation-accommodation processes allow. Gradually, they will develop a better grasp of reversibility and utilize argumentation's more complex strategies, which are supported by more complex syntactic pathways.

What children in the Anderson and Bashaw study could do well at the first-grade level, then, was describe. They were not yet experienced in the inversion-negation processes necessary for argumentation. Thus, the various modes of discourse have their linguistic and cognitive requirements, which appear to underlie writing and thinking, producing a developmental connection that stands behind all surface productions of language.

Linguistic Analogy for Cognition

When the conclusions of the many writing projects concerning mode have been considered, the implication becomes clear: elementary writers seem to write more or less complexly depending on the mode employed. The different modes of argumentation, exposition, narration, and description apparently present the writer with different syntactic challenges. Such a discovery may offer a linguistic analogy for cognitive growth. Since both linguistic and cognitive faculties assume internal predispositions toward development, outside intrusions of experience for cognitive change may work in a similar fashion as the variably functional nature of mode in writing. In other words, the mind gives meaning to its experiences by interpreting them linguistically on the basis of presently controlled syntactic structures. By actively interpreting outside intrusions--and their structural requirements--the writing mind must vary its own expression and thereby partici-

pate in the developmental process of structuring and restructuring syntactic complexity.

Another way of looking at this process has been offered in the work done by Kantor (21). Analyzing the content of fifth-grade writings, he found that the modes which appear more accessible to young students (narration and description) allow them entry to the cognitively more demanding modes (exposition and argumentation). Apparently, writers interweave narratives and descriptions into their explanations and arguments. Such a multidimensional interweaving process was suggested in Moffett's whole discourse approach to composition (22). Kantor extended Moffett's concerns:

> Growth in language, therefore, is not so much a matter of mastering the requirements of one mode and then moving to the next, as it is a process of differentiating modes of discourse so as to parallel the differentiation in levels of abstraction. (21:5-6)

Since mode seldom occurs in pure form, mode switching may be a basic ingredient in the linguistic process. Syntactic studies in writing concentrate on the main direction of the content to isolate main mode effect. Thus, both content and syntax provide evidence for natural developmental strategies in the writing process.

Such an explanation of the language process would provide evidence for an analogous explanation of cognitive development. In both, underlying structures take their cues for change from experience. In linguistic development, the competence undergoes structuring and restructuring. Accompanying the performance factor in language production are the mode variations required by reality. Performance therefore plays a crucial role in the development of competence, a basic expectation of developmental psycholinguistics pointed out by Cairns and Cairns (23).

In cognitive development, Piaget's definition of the mind involves its own built-in means for promoting cognitive growth. Not only does experience impinge upon the mind to stimulate equilibration, however, it may be considered to do so at varying complexity levels (similar to the various syntactic levels). The functional base of those complexity levels may play a role in whether assimilation or accommodation processes are involved for structuring or restructuring purposes. With function an essential requirement of formal change, both faculties may be considered to develop in a similar manner.

One implication of all this is related to the quandary regarding the primacy of cognition over language. The direction of such inquiries as this suggests an alternative answer. Some insight is provided in considering Piaget's description of the inversion-negation processes as deriving from social interaction at the the concrete operational level. As suggested by the higher syntactic encouragements occurring across the grades via the higher modes, children may be encouraged to higher syntactic development at all stages of development. Instead of certain phases of cognitive operations being limited to one stage or another, various embryonic forms of these operations may lie deeper in the linguistic faculty than formerly believed. And in lying deeper, they may only be recoverable as linguistic entities after a certain period of cognitive and linguistic maturation. Such an alternative explanation would involve the argumentation processes of negation-inversion in classes and reciprocity in relations as one form of a normal--across the stages--permanent stimulus for cognitive growth.

Education as Variety

The implications of the syntactic studies reported here may offer directions for education in general. Taking its clues from natural development in writing,

education would have to place variety--in all disciplines, contents, arts, and skills--at the heart of the curriculum. Education is obviously directed at overall intellectual development, but underlying all such functional development is the accompanying formal development. The surface strategies are founded on underlying structural complexities, ordered and regulated by innate predispositions of cognition and language. Only through the structural organization and reorganization of these faculties can surface products provide evidence of growth.

No "one best method" can possibly meet such requirements since few measurable entities of the full mind have even been discovered yet. Thus, the best framework for development may be a realistic, multidimensional approach--exciting, changing, motivating, integrative, and as personal as possible. Since we cannot determine underlying structural change by attending only to our immediate impressions of surface products, nature's general flow should be heeded, and those directions followed which children find stimulating. Surface switches of experience seem to stimulate development, according to syntactic research in language performance. Until more precise ways to measure mental growth have been discovered, as many different methods as materials should be available to the classroom.

One final note should be appended: the fact that this report suggests natural developmental strategies should not be considered evidence or support for the position that intelligence can be speeded up. In suggesting switches by mode in writing strategies as developmentally beneficially, it is not my intention to accelerate writing development but to acknowledge its direction. Instructional strategies that direct themselves toward encouraging apparent structural inclinations could be expected to result in gains that would direct the child to his or her highest level of performance--but not necessarily earlier than otherwise expected as normal.

####

1. Kellogg W. Hunt. Grammatical Structures Written at Three Grade Levels. Urbana, ILlinois: National Council of Teachers of English, 1965.

2. Kellogg W. Hunt. "Syntactic Maturity in Schoolchildren and Adults." Monographs of the Society for Research in Child Development. Vol. 35, No. 1, 1970.

3. Richard Braddock, Richard Lloyd-Jones, and Lowell Schoer. Research in Written Composition. Urbana, Illinois: National Council of Teachers of English, 1963.

4. William L. Smith and M. Beverly Swan. "Adjusting Syntactic Structures to Varied Levels of Audience," Consortium for Basic Research in English, Report No. 4, School of Education, University of Colorado at Denver, September 1976.

5. J. C. Seegars. "The Form of Discourse and Sentence Structure." Elementary English Review, X (March 1933), 51-54.

6. Christine San Jose. "Grammatical Structures in Four Modes of Writing at Fourth Grade Level," paper presented on occasion of the 1973 Citations for Promising Research, NCTE Convention, Philadelphia, Pennsylvania, November, 1973.

7. Lois V. Johnson "Children's Writing in Three Forms of Composition," Elementary English, 10 (March 1967), 265-269.

8. D. R. Bortz. "The Written Language Patterns of Intermediate Grade Children When Writing Compositions in Three Forms: Descriptive, Expository, and Narrative." Doctoral dissertation. Bethlenem, Pennsylvania: Lehigh University, 1969.

9. Mike Pope. "The Syntax of Fourth Graders' Narrative and Explanatory Speech." Research in the Teaching of English, 8 (Summer 1974), 219-227.

10. J. D. Perron. "The Impact of Mode on Written Syntactic Complexity," Studies in Language Education. Report Nos. 24, 25, 27. Department of Language Education, University of Georgia, Athens, Georgia, (May, June, October) 1976.

11. J. D. Perron. "Written Syntactic Complexity and the Modes of Discourse." Presented at the annual convention of the American Educational Research Association, New York, April 1977.

12. John L. Phillips, Jr. The Origins of Intellect: Piaget's Theory. San Francisco, California: W. H. Freeman and Company, 1975.

13. Carol Chomsky. The Acquisition of Syntax in Children 5 to 10. Cambridge, Massachusetts: The M.I.T. Press, 1969.

14. Paula Menyuk. Sentences Children Use. Cambridge, Massachusetts: THE M.I.T. Press, 1969.

15. Hermina Sinclair-de-Zwart. "Developmental Psycholinguistics." In Language in Thinking. Edited by Parveen Adams. Baltimore, Maryland: Penguin Books, Inc., 1969.

16. Dan I. Slobin. "Cognitive Prerequisites for the Development of Grammar." In Studies of Child Language Development. Edited by Charles S. Ferguson and Dan I. Slobin. New York, New York: Holt, Rinehart, and Winston, 1973.

17. Jean Piaget. Six Psychological Studies. New York, New York: Vintage Books, 1970.

18. H. E. Anderson, Jr. and W. L. Bashaw. "An Experimental Study of First Grade Theme Writing," American Educational Research Journal, 5(March 1968) 239-247.

19. Jean Piaget. Judgment and Reasoning in the Child. London, England: Routledge and Kegan Paul Ltd., 1951.

20. Jean Piaget. The Language and Thought of the Child. New York, New York: Harcourt, Brace, and Company, 1932.

21. Kenneth J. Kantor. "Creative Thinking and Modes of Discourse." Studies in Language Education. Report No. 26. Department of Language Education, University of Georgia, Athens, Georgia, September 1976.

22. James Moffett. Teaching the Universe of Discourse. Boston, Massachusetts: Houghton Mifflin, 1968.

23. Helen S. Cairns and Charles E. Cairns. Psycholinguistics: A Cognitive View of Language. New York, New York: Holt, Rinehart, and Winston, 1976.